Sergio Orozco

https://sergiomorozco.github.io/ sergio_orozco@brown.edu

Research Interest

I'm interested in endowing robotic systems with the ability to predict the future through the use of forward prediction models. More specifically, I believe that by giving robots the ability to understand how their actions could affect the future, they can make better decisions during learning and planning. My research interest is grounded in the belief that humans have an innate understanding of physics that informs our prediction capabilities, and we can equally embed this understanding into robots.

Education

Brown University October 2024 - Current
Doctor of Philosophy in Computer Science *GPA: 4.00*

University of Colorado at Colorado Springs August 2016 - May 2019
Bachelor of Science in Computer Science *GPA: 3.85*

Publications

ICRA 2024 **Robot Task Planning under Local Observability**. *Max Merlin, Shane Parr, Neev Parikh, **Sergio Orozco**, Vedant Gupta, Eric Rosen, George Konidaris.*

CoRL 2023 **Synthesizing Navigation Abstractions for Planning with Portable Manipulation Skills**. *Eric Rosen, Steven James, **Sergio Orozco**, Vedant Gupta, Max Merlin, Stefanie Tellex, George Konidaris.*

Teaching

Teaching Assistant - Introduction To Robotics September 2023 – December 2023
Brown University *Providence, Rhode Island*

- Helped 30 students develop and deploy robotic drones equipped with safety restrictions, networking capabilities, state estimation, controls, and high-level planning.

Experience

Research Assistant September 2022 – Present
Brown University *Providence, Rhode Island*

- Assisted and conducted published research in Humans to Robots Laboratory and Intelligent Robot Laboratory.
- Developed a testbed on a Boston Dynamics Spot robot which facilitated research on two projects.
- Equipped Spot to recognize ≈ 10 household items along with their corresponding locations and grasps which equipped researchers to test a multitude of novel task planners.
- Technologies Used: Python, BosdynSDK, Matplotlib, Numpy, Pytorch

Flight Software Engineer June 2021 – September 2023
York Space Systems *Denver, Colorado*

- Designed and developed simulation software to emulate over 40 payload and critical bus components for York's S-Class satellites.
- Simulated over 500 commands and over 1,000 telemetry items processed by the onboard flight computer.
- Provided customers with the capabilities of York's 5 million dollar S-Class Satellite for testing without needing to provide any actual hardware.
- Designed and developed Store and Forward capabilities on York's S-Class satellite to ingest over 100 Jreap Messages per second using Google Protocol Buffers.
- Exposed to multiple messaging protocols such as Nano Satellite Protocol and Google Protocol Buffers.
- Participated in several technical software interviews to search for potential talent amongst applicants.

- Technologies Used: C# .NET, Google Protocol Buffers, C, CMake, Make, Docker, Coverity.

Software Engineer June 2019 – May 2021

Sierra Nevada Corporation *Denver, Colorado*

- Developed and maintained a 23 million dollar simulation program that emulated realistic signals intelligence for the United States Air Force.
- Communicated and collaborated with users to create realistic radio signals.
- Developed mission application systems for over 200 MH-60 helicopters capable of displaying IR video feed and Cursor on Target data to a world map.
- Lead and mentored college interns to develop proprietary tools for the company.
- Technologies Used: C# .NET, Reactive, Python, Windows Presentation Forms, Windows Form Application.